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Soil tests see no CBM impact

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A multi-year monitoring program for irrigated soils in the Tongue River Valley has found no evidence of impacts from coal-bed methane well water discharges.

Neal Fehringer, who operates the agronomic service Fehringer Agricultural Consulting, has collected soil data for the Agronomic Monitoring and Protection Program since its inception in 2003. He recently visited



Coal Bed Methane

Miles City, discussing the results of his fall 2006 data collections with several groups.

"We have not seen any impacts due to CBM water discharge into the Tongue," Fehringer said. "When SAR and ESP values are down,

there can't be any negative impact on the soils or crops."

SAR stands for sodium adsorption ratio, while ESP stands for exchangeable sodium percentage. Both are measures of various salts contained in water and soil. They are frequently used terms in the ongoing controversy over CBM development in Montana.

In the CBM extraction process, groundwater lying over coal beds is pumped out, and the release of pressure allows methane and other

forms of natural gas trapped in cracks and fissures in the coal to accumulate and be pumped to the surface with the water.

Opponents of CBM development fear that the water, which varies greatly in quality but often carries a load of various salts, could threaten the productivity of irrigated crops and, on some soils, destroy the soil structure itself, rendering it worthless for growing anything.

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Tests

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AMPP originated in 2003, when Fehringer, William Schafer of William Schafer Limited LLC, and Kevin Harvey of Kevin Harvey, LLC, Soil and Water Consultants, developed a monitoring program that was commissioned and funded by Fidelity Exploration and Production Co., the firm that was doing exploratory work in coal-bed methane on the CX Ranch along Montana's southern border, and discharging the water from their wells into the Tongue River.

In the study, 16 fields have had extensive soil testing. Ten of them are irrigated from the Tongue River, two are irrigated from Tongue River tributaries, two are in the Tongue River Valley but not irrigated, and two are irrigated from other Montana waters.

noted that the Fidelity contract has expired. Major financing for the monitoring project has been taken over by the Montana Board of Oil and Gas Conservation, the Billings-based branch of the Montana Department of Natural Resources and Conservation that regulates the oil and gas exploration and production industry.

"Fidelity was completely satisfied with the science we had done," Fehringer said. "The funding's changed but the science hasn't. We're using exactly the same protocol.

"We're going to continue this for as long as we receive funding. We will bid on a new contract that starts July 1."

He said that when the project started, Fidelity insisted that the plan be reviewed by several public regulatory and land-management agencies.

mended and incorporated into the plan.

"Input from agency personnel improved the program," Fehringer said. "What looked like a negative (Fidelity's financing) turned out to be a positive, because we went out of our way to be public and get input."

The fall data collection was the fifth time the sites were tested.

"SAR and ESP declined significantly from 2004 to 2005, due to precipitation both here and in the Big Horn Mountains," he said, noting that spring runoff in 2005 completely changed the chemical composition of water in the Tongue River Reservoir in a six-week period.

Fehringer said the sodium content in the forages harvested off the test fields was checked, and there has been no significant change over the

"Corn is species-specific for sodium uptake. The rest of them, especially hay barley, are responsive to sodium content in the soil," he said.

According to a chart he made of the average ESP in composite soil samples in the study, the ESP in the fall of 2003 was 4.5. In the spring of 2004 it was 5.4, in the fall of 2004 it was 5.5, in the fall of 2005 it was 3.2, and in the fall of 2006 it was 3.6.

"ESP and SAR track each other very closely, and they are declining overall," he said.

He noted that changes have reflected the precipitation or lack of it through that period of time.

The crop yields from those fields are also monitored. The variations are attributable to known causes, such as changes in fertilizer applications, insects, and weather such as early- or late-season